

## ISSUES OVERVIEW

### Olympic National Park

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Significant water-related issues at Olympic National Park (OLYM) are presented in this *Issues Overview*. These high-priority issues were identified during my visit with OLYM staff with additional information obtained through interviews with the National Park Service – Water Resources Division (WRD) staff (Gary Smillie, Matt Hagemann, and Barry Long). The content of each issue is limited to the information provided to me during the time this issues overview was prepared. Where appropriate, issue-specific recommendations previously proposed by the NPS (i.e., OLYM, WRD) are included. As a result, description of the following issues vary in detail and inclusion of recommendations is inconsistent. A limited review was also conducted on the park's natural resources publication database. Existing publications, which appeared to relate to specific issues, if any, are listed at the end of each issue discussion. The park is encouraged to prioritize these issues and seek technical assistance through WRD and local expertise to prepare project statements that build from the existing information base and ultimately mitigate the identified problem(s).

**Baseline Information:** To effectively manage natural resources, inventory and monitoring activities should integrate into the overall natural resources planning and management process. Information obtained from these activities better assist the NPS toward understanding how various environments in a park unit function naturally and helps to isolate anthropogenic changes. Some of the baseline information needs are illustrated in the issues presented in this overview.

In FY95-FY96, OLYM was involved in a WRD-funded project, "Develop Protocols for Physical and Biological Monitoring". OLYM staff used the U.S. Environmental Protection Agencies (EPA's) Regional Environmental Monitoring and Assessment Program (REMAP) protocol for surveying selected water quality, biological, and habitat variables in 20 small streams on the west side of the park. Logging outside the park impacts most of these streams. There were several streams selected as "control" sites, but because they were generally at higher elevations, they are not directly comparable with the impacted sites. The water quality data obtained from this project were submitted to WRD in Ft. Collins. OLYM will prepare a summary project report in 1999 (Wullschleger, pers. comm., 1999).

One relatively new effort to better understand the health of aquatic systems is the evaluation of biological integrity. The EPA has endorsed the use of biological integrity as an indicator of environmental condition and ecological health. It is unique among currently used indicators in that 1) it uses information collected directly from the aquatic organisms and their surrounding biological community, 2) the biota are shaped by all environmental factors to which they are exposed over time, whether chemical, physical, or biological, and 3) it combines multiple, community level, biological response characteristics into an indicator of cumulative environmental impacts (Karr 1991, 1993). The Washington State Department of Ecology uses biological assessments of surface waters to supplement traditional chemical evaluations.

Bioassessment activities are currently being conducted in Washington. These stream bioassessments are intended for use in Washington state to supplement the Statewide Water Quality Assessment Report, to prioritize streams for intensive surveys and development of total maximum daily loads (TMDLs), and to assess the success of pollution abatement programs (Davis et al., 1996).

**Kalaloch Lodge Area:** Interfaces between terrestrial and fluvial ecosystems are sensitive to anthropogenic change. An example in the park of how these riparian areas react to change is found on the Pacific coast at the mouth of Kalaloch Creek. At this location, several cabins and a lodge, which are privately owned and operated, were built along the steep banks of the creek. Based upon the surrounding vegetation observed in the area, it appears that the natural vegetation (i.e., large woody vegetation) has been removed and replaced with grass along the southern bank of Kalaloch Creek to accommodate these structures and visitor use, and to provide open vistas of the Pacific Ocean. This development appears to have accelerated erosion of the bank, over time, resulting in bank instability that threatens the lodge and several cabins.

Based on my preliminary observations, it appeared that the erosion was caused by stream flow and tidal processes along the outside bend Kalaloch Creek makes just before entering the ocean. Gary Smillie (NPS-WRD), who has expertise in stream morphology, visited the site in 1998 to look at this erosion problem. Gary believes that stream/tidal erosion is not the main reason for bank instability at this site. This is well supported by several facts; 1) Kalaloch Creek's watershed is small (approx. 21 mi<sup>2</sup>), which limits the magnitude of flow (erosional power), 2) the gradient of Kalaloch Creek at this site is low reducing the tendency of the creek to erode laterally, and 3) tidal water extends into the creek further reducing the gradient of the creek and its ability to erode laterally.

According to Gary, the primary reason for bank instability appears to be saturation of the over-steep bank material. With the removal of large woody vegetation, which stabilized the bank, natural processes are currently working to reduce the slope of the embankment. The slower process of stream and tidal erosion at the embankment toe, may contribute to on-going instability by preventing the slope-flattening process to completion. Accelerated erosion of the embankment was likely caused by two very heavy precipitation events in 1995-96 and 1996-97. It is also probable that the rotting of roots from the trees removed years ago contributes to the accelerated erosion.

Gary suggested the following short-term and long-term management actions in a 1998 trip report:

Short-term management:

1. Monitor the rates of retreat of the bluff line at rapidly eroding locations.
2. Take steps to direct surface runoff away from the bluff line.
3. Prevent any runoff from flowing over the surface of the bluff line.
4. Retain any woody vegetation that takes hold on the bluff.

Long-term management:

1. Relocate the lodge and cabins that are near the eroding bank. If relocation can not occur in the near future, a drain pipe network should be designed and installed to remove water from the subsurface to reduce seepage out of the embankment.
2. Encourage the re-establishment of large woody vegetation on and near the bluff line.

Relevant report found in OLYM's database:

T.A. Terich. 1986. Kalaloch Coastal Erosion Issue. (OLYM-1137).

**Lake Crescent and Ozette Lake:** Lake Ozette is the largest lake in OLYM and the third largest lake in the state of Washington. The lake supports returns of chinook, sockeye, coho, and chum salmon, steelhead and cutthroat trout, and a number of resident non-salmonids. The Ozette sockeye population is one of the only remaining in the state of Washington and has been recently listed by the Federal Government as a Threatened species. Logging activities, which began in the 1940's, appear to have impacted the spawning habitat in the Lake Ozette tributaries and along the lake's shore. Based on my observations of areas harvested for timber within the Lake Ozette watershed, buffers to protect riparian vegetation along streams for the most part are non-existent. With the larger woody vegetation being removed from stream banks, several impacts to the fluvial system can result, including bank instability and elevated water temperatures, sedimentation, and turbidity. OLYM should review existing Department of Natural Resources and Timber/Fish/Wildlife (TFW) standards for timber harvest practices to protect riparian zones. Questions that need to be answered include: (1) are existing harvest practices adequate in protecting OLYM's water resources? (2) what are the park option(s) when these standards are violated, and what type of monitoring program would best evaluate these conditions, especially in the park's coastal strip?

Another observation that was made while driving to some of the timber harvest areas was the extensive use of chemicals to control encroaching vegetation along the backroad shoulders. These observed areas were located outside the park's boundary, but within the Ozette Lake watershed. Does this management practice create any water quality concerns for OLYM waters?

One of the Lake Ozette tributaries that I visited, Coal Creek, flows through timber harvested areas. Although stream flow was low during my visit, excessive bank erosion and sediment accumulation were evident. During periods of heavy rainfall (Lake Ozette area receives > 100 in/yr), turbidity levels in streams entering Lake Ozette rise and turbidity plumes develop along the east shore (Olympic National Park, 1994). This has resulted in a loss of salmon spawning habitat (sediments covering current beach spawning sites) and the introduction of an exotic plant, reed canary grass, which is invading the sediment-rich areas in the lake. In 1993, monitoring revealed approximately 400 Lake Ozette sockeye adults, one of the smallest escapements on record. OLYM has cooperated with the Makah Tribe for several years on studies directed toward restoration of the Lake Ozette sockeye population. The park initiated a WRD-funded project, "Lake Ozette Water Quality Study" for FY93 (\$23,000) and FY94

(\$17,000). The two principal objectives of the study were to 1) provide baseline information to allow future monitoring of the lake's water quality and fish populations, and 2) document impacts to the lake's fish resources. OLYM is currently working on the draft summary report for this project. During the study, poor water quality (especially high water temperatures) was recorded in Lake Ozette tributaries. Water quality was better in Lake Ozette, excluding occasional turbidity plumes along the eastern shore during storm events (Meyer, pers. comm., 1999).

A multi-agency recovery effort has been initiated to rehabilitate beach-spawning sites. The only geomorphic expertise on the recovery team is provided by Rayonier Timber Company. OLYM should seek complimentary expertise to participate in this effort or, at a minimum, OLYM staff will need to review proposals and work products generated from this effort.

I located some publications from the Washington State Department of Ecology's database that may assist OLYM in formulating management strategies with respect to timber harvesting:

- Rashin, E. and D. Graber. 1992. Effectiveness of Washington's Forest Practice Riparian Management Zone Regulations for Protection of Stream Temperatures. Publication No. 92-64.
- Rashin, E., C. Clishe, and A. Loch. 1994. Effectiveness of Forest Road and Timber Harvest Best Management Practices with Respect to Sediment-Related Water Quality Impacts, Interim Report No. 2. Publication No. 94-67.
- Rashin, E. 1997. Effectiveness of Forest Road and Timber Harvest Best Management Practices with Respect to Sediment-Related Water Quality Impacts. Publication No. 94-027.

OLYM has exclusive federal jurisdiction. Thus, private property owners within the park at Lake Crescent, and along the eastern shore of Lake Ozette do not apply for state or county permits regarding activities in wetlands or along shorelines of these lakes. OLYM has no permit process regulating activities by private landowners in wetlands or along the shores of both lakes, but handles each request for a dock or bulkhead on a case-by-case basis. The park's Lake Crescent Management Plan (National Park Service, 1998) provides a programmatic guide intended for recreational use of the lake for the next 15-20 years, but does not specifically guide activities for the protection of natural shoreline environments important for biological habitat. The park is seeking technical assistance from the NPS-WRD to assist in preparing shoreline management guidelines for Lake Crescent and Lake Ozette. Specific tasks as defined in a May 1999 memorandum submitted by OLYM's Superintendent include: (1) Determine whether park-specific regulations and a permitting process should be developed and administered by the park for wetlands/shoreline activities, or whether the park should work with local and state agencies to administer their permitting processes within the park, (2) Outline a process to involve the appropriate agencies in developing shoreline protection guidelines or regulations, (3) Develop guidelines for private landowners within the park to assist them in understanding acceptable wetlands or shoreline development and associated processes (i.e., required permits). These guidelines would also define the agencies to be involved.

OLYM staff worked with WRD to prepare the following five questions that were recently submitted (May 1999) to the Deputy Regional Solicitor for addressing:

1) Is OLYM authorized under “exclusive jurisdiction” to implement the following sections of the Clean Water Act in the management of water quality?

Section 303 (33 USC 1313) Water Quality Standards and Implementation Plans  
Section 308 (33 USC 1318) Inspections, Monitoring and Entry  
Section 309 (33 USC 1319) Federal Enforcement  
Section 402 (33 USC 1342) National Pollutant Discharge Elimination System  
Section 404 (33 USC 134) Permits for Dredged or Fill Material

2) Do any other NPS units exercise “exclusive jurisdiction” to implement water quality programs under the authorization of these sections of the Clean Water Act?

3) Is OLYM authorized under “exclusive jurisdiction” to issue water rights?

4) Are you aware of any memoranda of understand between OLYM and county, state, or federal agencies that delegate authority to the park to implement water quality programs?

5) Can the NPS require shoreline protection projects on private inholdings (assuming proper permitting)?

Relevant reports found in OLYM’s database:

Hagen, T.A. and J. Aho. 1989. Lake Crescent Water Quality Status Report 1984-1989. (OLYM-2527, 2256).  
Boyle, T.P. and D.R. Beeson. 1991. Trophic status & assessment of non-point nutrient enrichment of Lake Crescent, Olympic National Park. (OLYM-2549).  
Hosey and Associates. 1987. History, mythology, and limnology of Lake Crescent, Olympic National Park. (OLYM-2188).  
Mausolf, M. 1970. Map: hydrographic contour chart of Lake Crescent (OLYM-2218).

**Quillayute River:** In 1932, a jetty was constructed immediately south of the Quillayute River mouth as part of the Quillayute River Navigation project. Over the years the project was modified to increase the channel dimensions and provide a “mooring basin”. A large gravel and sand spit extended from the mouth of the Quillayute River to James Island protecting the navigation channel and the town of LaPush. After the spit was breached twice in the 1950s, the U.S. Corps of Engineers (COE) began to actively maintain the spit with dredged material from the navigation channel. In 1982, the COE placed 39,000 tons of rock on the lower end of the spit, creating a 600-foot rock-breakwater. In 1995, this breakwater was expanded to 1050 feet. In 1996, the upper portion of the spit was breached by the combined effects of ocean wave and high discharge of the Quillayute River. In 1996-97, the COE reconstructed the upper spit and armored it with 225,000 tons of rock revetment (Wullschleger, pers. comm., 1999).

In 1995, the park received a letter from a person who has been visiting the Pacific coastal area for 35 years and was concerned about the recent increase in erosion at Rialto Beach. Supporting evidence include an ongoing loss of trees along seaward edge of the coastal forest and the 1996 destruction of the western half of the Rialto Beach parking area. Carl Schoch, an

oceanographer from Oklahoma State University, suggested that the accelerated beach erosion could be the result of a reduced sediment supply. It is possible that the 1932 jetty is intercepting near-shore sediments that are needed to maintain Rialto Beach. Maintenance of the spit may also contribute to a reduction in sediment transported to the beach. When the spit is breached, suspended sediments replenish Rialto Beach. Evidence of this process is shown in 1890s COE maps (Wullschleger, pers. comm., 1999). Since 1932, breaches in the Quillayute Spit have been quickly repaired in the interest of maintaining the navigation channel.

OLYM should build from these theories and observations and quantify the relationship(s) between the navigation project and beach erosion. The park is currently monitoring smelt egg abundance and beach sediment composition at Rialto Beach without an understanding of local sediment transport and deposition. Has the natural beach habitat been altered by the navigation project? In a 1996 memorandum from Jackson, et al., a recommendation was made to OLYM management to develop and communicate to the COE an overall statement of policy or management philosophy that defines the conditions under which the park would tolerate Quillayute channel manipulation within the park's boundary.

Relevant reports found in OLYM's database:

Nelson, L.M. 1982. Streamflow and sediment transport in the Quillayute River Basin, Washington (OLYM-1020).

Unknown author. Hydrology narrative, Quillayute River comprehensive plan (OLYM-1282).

U.S. Department of Commerce (Sanctuaries & Reserves Division). 1991. Olympic Coast National Marine Sanctuary Draft Environmental Statement/Management Plan. (OLYM-2546)

**Finley and Kestner Creeks:** OLYM is located in a geologically young system that is in an accelerated state of flux in many areas. An example of management challenges in this dynamic environment is found in Quinault Valley at Finley Creek. Maintaining a bridge that crosses Finley Creek in the park has become a continuous NPS maintenance effort to keep the stream channel open and confined to the dimensions of the existing North Shore Road bridge, while maintaining a berm to protect adjacent properties from flooding. The creek drains young steep slopes with large glacial deposits. The result is a young stream system working to establish equilibrium within the landscape. During this process, the stream is very unpredictable, transporting large bedloads while forming new and abandoning existing channels. This becomes frustrating for park managers who need to know outcomes in order to properly manage around them. In some cases like Finley Creek, the outcome is unknown. According to a 1994 trip report prepared by WRD, the typical methods of floodplain determination do not apply for the Finley Creek area. The standard assumptions in floodplain delineation are stable hydrology and stable channel and floodplain geometry. Neither of these assumptions is valid for this area. This also applies to Kestner Creek, a tributary of Quinault Lake located just west of Finley Creek. It has been speculated that Finley and Kestner creeks were joined at one time and the present Kestner Creek was the lowest reach of Finley Creek...again, suggesting an unstable area susceptible to avulsion. Increases in Kestner Creek flow, as a result of the migration of Finley Creek, would likely increase the frequency and magnitude of flooding in the area (Jackson and Smillie, 1994). Development in this area should be minimized and where possible park operations/structures should be relocated to a

more stable environment in the park. Studies in the Finley/Kestner Creek watershed by appropriate expertise (i.e., stream morphologists, geologists, hydrologists) should be encouraged to better understand and communicate the natural function of this system. Expertise outside the Department of the Interior would be preferred to provide “non-bias” opinions, which should increase the acceptance from private landowners in the area. It is very important for the park to base management of this area on site-specific assessments.

The 1994 trip report recommended that protecting existing park structures within the Finley and Kestner creek drainages should include maintaining the existing berm on the west channel of Finley Creek and the continued removal of gravel in Finley Creek. It is anticipated that continued maintenance of the existing Finley Creek channel would become increasingly difficult with time. If additional permanent structures are proposed in the area, additional information should be developed to determine with more certainty what site(s) are preferable from a flood hazard perspective (Jackson and Smillie, 1994).

**Hoh River Valley:** The Hoh River Valley road, which parallels the Hoh River, is threatened by river erosion at several locations. In response to this threat the park has stabilized the bank at several locations with rock revetments. A private landowner downstream from one of these stabilization projects filed a lawsuit against the NPS for erosion/flooding problems on their property, which allegedly resulted from the NPS bank stabilization project(s). Gary Smillie (NPS-GRD) visited the area in 1998, and felt that the erosion along the road was a result of the river’s natural adjustment within the Hoh River Valley. Where erosion is threatening the valley road, careful site-specific evaluation should be made before a decision to employ specific bank stabilization techniques. Where bank stabilization is determined to be necessary, innovative techniques such as biorevetments and bend-away weirs should be considered, along with more traditional methods before an alternative is chosen (Smillie, 1998).

Immediately west of the park boundary along the Hoh River, Jefferson County installed one large biorevetment with the objective of reducing erosion along the north bank of the Hoh River. This project was part of a mitigation agreement with the Hoh Tribe. Unfortunately, Jefferson County did not consult with appropriate expertise (i.e., Tim Abbe, University of Washington) prior to the stream bank stabilization project (Wulschleger, pers. comm., 1999). The project cost was approximately \$125,000 and the success of this effort is currently unknown. Communication between OLYM and Jefferson County should be encouraged so separate projects compliment each other and meet the overall objective(s) of river management. Currently, OLYM, the Hoh Tribe, and Jefferson County managers have expressed interest in working together to conduct a geomorphic analysis of the Hoh River. The Hoh Tribe contacted Bureau of Reclamation hydrologists in September 1999 to request assistance with this study. Through the agency’s Native American Affairs program, an investigation of geomorphic and fluvial processes of the Hoh River is beginning in FY00. OLYM has submitted a FY00 technical assistance request to the NPS Water Resources Division to participate in this effort and ensure accurate representation of NPS objectives.

Another water-related issue in the Hoh River Valley is maintaining a fish passage from the Hoh River to Taft Creek. The creek provides an important spawning environment for adult

salmon and a wintering area for juvenile salmon. Currently, the area around the culvert underlying the valley road that drains Taft Creek has been intensely scoured on the Hoh River side. The erosion occurred during the 1999 winter months and has created a barrier for fish passage due to vertical displacement between the culvert and creek bed. Expertise in stream morphology is needed to select an appropriate culvert design for Taft Creek. This would likely include the collection of discharge and sediment transport data during several storm events to determine the project design. In better understanding the creek's erosion power from these data, a sufficient bank armor can then be installed to accommodate storm flows.

The park also needs similar technical assistance in designing a new entrance to the "boundary pond" that will connect the pond to the Hoh River. This connection will provide an overwintering site for coho and access to spawning habitat for migrating salmon (Meyer, pers. comm., 1999). The shallow pond is recharged by local storm runoff and hillslope seepage, which is trapped behind the Hoh River Valley road embankment. The pond is regarded by the Hoh Tribe as a partial mitigation for salmon habitat affected by the valley road.

Relevant reports found in OLYM's database:

Kersch, D.L. 1987. Flood hazard assessment of the Hoh River at Olympic National Park Ranger Station, Washington (OLYM-0914).

Inglis R. 1989. Preliminary hydrologic measurements: Taft Creek groundwater study, Olympic National Park, Washington, 1987-1988 (OLYM-2257)

**Sol Duc River:** The Sol Duc River supports several species of fish and aquatic invertebrates. Of particular management concern to the park, the State of Washington, and the Quileute Indian Tribe are the coho salmon found in the upper portions of the river. The adults from this stock are regionally unique in that they migrate from the Pacific Ocean back to the river much earlier than other coho stocks. OLYM staff have conducted spawner surveys in 1980s and 1990s and never observed coho or other species spawning below the outflow from the pools utilized by the Sol Duc Resort, a concessionaire-operated facility located on the river. The resort utilizes natural hot springs along the river as a water source for their swimming pools.

Bacteria levels in the resort pools have been high at times and a dilute solution of chlorine has been used by the concessionaire to reduce the elevated bacteria concentrations. Water from the pools is discharged along a stretch of the river, which has approximately 1400 feet of riprap to protect the pools, the discharge pipe, and resort buildings. In order to evaluate if a relationship exists between the resort operation and lack of coho spawning in the area, a WRD-funded water quality project was initiated in FY94, "Assess Effects of Soleduck Resort on River Water Chemistry and Biota". Biological and hydraulic characteristics of the river were analyzed in an upstream control, a downstream control, and the test reach (outfall/riprap area). Water quality monitoring (chlorine, dissolved oxygen, conductivity, pH, turbidity, and redox) was also incorporated into the project. OLYM has completed the draft summary report for the project. The preliminary conclusion is that the chlorine probably evaporates off before flushing back into the river. The bank stabilization (1400-ft riprap) is now suspected as the primary reason for lack of coho spawning by reducing stream habitat (Meyer, pers. comm., 1999). Additional studies should build from this conclusion to better understand the impact(s) the resort has on the river and its aquatic habitat.



**Hydroelectric Dams:** In 1998, after years of hearings and negotiations, the Federal Energy Regulatory Commission (FERC) offered Tacoma Power its license to keep operating its 70 year old hydroelectric project on the Skokomish River. The hydroelectric project built in the 1920s has blocked historic salmon runs that entered OLYM and provided subsistence needs for the Skokomish Tribe. In response to these environmental impacts, the FERC is requiring Tacoma Power to increase the river flow from 30 to 240 cubic feet per second and to build new fish passages and hatchery facilities as part of the license compliance. Tacoma Power feels that these FERC compliance conditions are “unacceptable”.

Congress passed a law in 1986 requiring the FERC to balance power generation and environmental protection when it licenses hydroelectric dams. This year, the 162-year-old Edward Dam in Maine became the first dam removed under this policy. A similar situation exists on the Elwha River where two dams were installed Elwha (1912) and Glines Canyon (1927), which resulted in the blockage of more than 113 kilometers of mainstem river and tributary habitat (Munn, et. al., 1999). In 1992, in response to the loss of salmon runs in the Elwha River Basin, President Bush signed the Elwha River Ecosystem and Fisheries Restoration Act, which authorized the removal of the two dams for ecosystem restoration. This has become a political issue over the years led by Washington Senator, Slade Gorton (chairman of the interior subcommittee of the Senate Appropriation Committee), who has concerns that approval of removing the Elwha River dams might extend to dam removals along the Columbia-Snake river system. As a result, the future removal of Elwha River dams is uncertain.

The U.S. Geological Survey conducted a study on the Elwha River to begin describing baseline conditions for assessing changes that would result from the proposed removal of two dams on the river (Munn, et. al., 1999). Nutrient data from this study indicates that the Elwha River and its tributaries are currently oligotrophic (low in nutrients). Removal of the dams and restoring the historical anadromous salmon runs would restore nutrient loading to the Elwha River watershed.

Relevant reports found in OLYM’s database:

BIA Lower Elwha Tribe. 1991. Assessment of Elwha Ecosystem Restoration Alternatives: Dam Removal or Fish Passage. (OLYM-2529).

FERC. 1981. Water resources appraisal for hydroelectric licensing – Elwha River Basin, Washington. (OLYM-1354)

**High Altitude Lakes:** In the past, many of the mountain lakes in OLYM were stocked with eastern brook trout before this management practice was understood as problematic for native fauna. Brook trout impact invertebrate communities and may reduce native amphibians both by competing with them for food resources and by preying on them. In addition, OLYM’s high altitude lakes, especially those located on the east side of the park, are affected by atmospheric contaminants from urban areas along the I-5 corridor (Winter, pers. comm., 1999). Existing information on these high altitude lake issues should be accumulated to fuel appropriate NPS management strategies.

**Hazardous Waste Management and Spill Response:** The potential for hazardous waste (i.e., petroleum) spills along OLYM's coast and roadways (Hwy 101) that cross through the park will always exist. There have been two coastal spills since 1988 that have resulted in some damage to intertidal biota in the park (Wulschleger, pers. comm., 1999). The recent 1999 grounding of a cargo ship, New Carissa, on Oregon's coast would have impacted OLYM's coast if emergency crews had not been successful in containing and burning the fuel (approximately 400,000 gallons of oil and diesel). An accidental spill could have very serious consequences to the park's water resources. The NPS is severely limited in qualified personnel and spill response equipment to effectively respond to toxic spills in OLYM. Emergency response to a major spill requires expertise and field equipment that extends beyond the capabilities of the NPS. As a result, a communication process (i.e., Spill Prevention Control and Countermeasure (SPCC) Plan) should be completed so park management can request assistance from qualified federal, state and/or private contractor personnel in a time-efficient manner. Many agency programs in the region (U.S. Coast Guard, U.S. EPA, State agencies from WA, OR & ID) use the Northwest Area Contingency Plan as the foundation for spill response (Galosso, pers. comm., 1999).

Several efforts are underway to better manage shipping lanes along Washington's coast in a way that provides additional protection to coastal resources. For example, the Olympic Coast Marine Sanctuary, in working with the U.S. Coast Guard, has designated an area for ships to voluntarily avoid due to sensitive natural resources. The sanctuary is currently monitoring the volunteer response through radar data/GIS mapping (Galosso, pers. comm., 1999).

Along with providing emergency response formalities, a SPCC plan defines appropriate park management for hazardous materials (i.e., gasoline, antifreeze, oil) used in park operations. The threat of petroleum contamination to water resources extends to petroleum storage tanks located inside the park's boundary (Kalaloch Lodge, NPS Maintenance facilities, Crescent Lake). It is important for OLYM to meet all the compliance requirements for fuel storage tank management and to monitor compliance with privately owned tanks in the park. John Wulschleger and I visited a site at Lake Crescent where an existing petroleum underground storage tank will be upgraded by the private owner to an aboveground system. John expressed concern that the aboveground tank design does not include a catchment basin around the tank for secondary containment. The new aboveground tanks should be double-walled, possibly including interstitial monitoring to add the level of protection needed for early warning failure; therefore, this upgrade would not require tank installation inside a catchment basin.

**Coordination/Partnerships:** Today, multi-agency coordination is essential in NPS units to effectively monitor and manage their natural resources. In Washington, there are numerous efforts headed by state and federal agencies that compliment OLYM's information and management needs. It is important for OLYM to maintain involvement in these efforts in order to draw from this external support. In February 1999, Matt Hagemann (WRD) contacted representatives for the U.S. EPA (Bruce Cleland, Steve Ralph), Washington Department of Ecology (Ron McBride) and Washington Department of Natural Resources (Jeff Cedarholm, George Wilhere) to discuss existing water-related programs in the state. According to Matt, all these individuals seemed very interested in attempting to understand the monitoring needs of the park and in protecting park resources. U.S. EPA seemed willing

to provide an overall perspective on the Total Maximum Daily Load (TMDL) process. The Department of Ecology was interested in assisting OLYM in prioritizing their TMDL development process. The Department of Natural Resources seemed interested in helping the park with monitoring (perhaps in exchange for providing reference sites for their Habitat Conservation Plan (1997) efforts).

The Department of Ecology is currently updating its surface water quality standards. I contacted Mark Hicks (Department of Ecology) while I was in Seattle to discuss the status of Washington's water quality antidegradation implementation plan. A draft is currently under review, as part of Washington updating the surface water quality standards, and Mark sent a draft copy to me (see attachment A). The implementation plan includes a strong level of protection for high quality waters that constitute an outstanding national resource, which should apply to National Parks.

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## ATTACHMENT A

Provided by Mark Hicks, Washington Department of Ecology: (360) 407-6477

### Revised Draft Antidegradation Implementation Plan

**June 4, 1999**

#### **A. Section Definitions.**

**“Actions”** refers broadly to any human projects or activities.

**“Bypass”** means the intentional diversion of waste streams from any portion of a treatment facility.

**“Designated uses”** or **“Characteristic uses”** means those uses specified in the water quality standards for each waterbody or segment thereof. The department will assume the designated uses assigned to waters within the water quality standards (this chapter) include all existing uses, unless convincing evidence suggests otherwise. Through a public process and formal change to this chapter, designated uses that are not actually existing uses may be removed from the water quality standards for a specific waterbody in accordance with the conditions established in federal regulations.

**“Existing in-stream uses”** means those in-stream uses actually attained in the waterbody on or after November 28, 1975, whether or not they are designated uses. To qualify as an existing in-stream use, a use must have occurred over multiple years; the waterbody must have had physical, chemical, and biological characteristics since November 28, 1975 that could have supported the use; or it must have been a in-stream use eliminated after November 28, 1975 due to human barriers, obstacles, or actions. Aquatic life uses need not be present continuously or in large numbers to be considered an existing use. For example, only seasonal use of habitat or presence only during wet or cooler years still qualifies as an existing use. Neither introduced species or put-and-take fisheries need to be protected as an existing in-stream use. In the context of this chapter, the word “in-stream” is used to exclude those existing uses that occur after the water has been withdrawn from the waterbody, such as domestic and irrigation water uses. The use of the word “in-stream” in this context is generic, extending to all types of fresh and marine waterbodies, and is not to be read as being limited to only streams, rivers, or creeks.

**“Full support”** refers to maintaining water quality characteristics in such a way that existing and designated in-stream uses are not impaired beyond the levels of support that would be expected in the waterbody without the influence of human actions as determined by the department. Some flexibility is intended in setting levels of use support and accompanying water quality standards in the following two situations: (a) Where human caused conditions or sources of pollution present before November 28, 1975 prevent the full support of in-stream existing or designated uses and cannot be remedied or would cause more

environmental damage to correct than to leave in place, and (b) Where dams, diversions or other types of hydrologic modifications present before November 28, 1975 prevent full support for existing or designated in-stream uses and where it is not feasible to restore the waterbody to its original condition or to modify or operate such modifications in a way that would result in full support. In these two cases, the department may maintain and protect existing and designated in-stream uses at a level below full support. However, the department may encourage local governments and others to continue to look for ways to extinguish these historic sources of water quality degradation.

**“High quality water constituents”** means water quality constituents of higher quality than the criteria and standards established to protect the designated uses of a waterbody under this chapter.

**“Integrity”** refers to a system's overall health and wholeness, including presence of all appropriate elements and occurrence of all processes at appropriate rates, and refers to conditions under little or no influence from human actions. Integrity reflects natural evolutionary and biogeographic processes, and provides a benchmark condition against which other conditions can be compared.

**“Lowering of Water Quality”** means any human action that individually or cumulatively with other human actions either locally or off-site contributes to or results in a decrease in the quality of a waterbody to support its existing in-stream uses or designated uses described in and by this chapter. Increasing the quantity or effect of chemical pollutants, increasing suspended sediments, increasing temperature or oxygen demand, and decreasing or physically degrading available aquatic habitat are all examples of changes that constitute a lowering of water quality. Recreational activities such as hiking, fishing, walking along shorelines, and launching boats can all cause physical disturbances to soils and substrates that may cause localized and minor changes in water quality. However, unless unusual circumstances exist these types of recreational uses are not considered to cause a lowering of water quality. An entity proposing a new or expanded action may use water quality offsets sufficient to compensate for the water quality effects of the proposed action; to create in effect a situation of no lowering of water quality.

**“New or expanded actions”** or **“New, or expanded actions”** mean human actions that cause a lowering of water quality to occur after January 1, 1999, that did not exist before this date. It also includes previously existing actions that are or would be modified after January 1, 1999 in a manner that would cause a further lowering of water quality. Actions that move from one localized site to another or expand from an existing location (e.g., forest practices, construction, or road maintenance activities) are considered to be new or expanded when such a move or expansion occurs. New or expanded does not refer to changes such as renewal of an existing permit with effluent limits that remain unchanged, changes in crop management practices, bringing fallow farm or grazing lands back into production after a rest cycle, or normal year-to-year changes in animal stocking rates.\_

**“Water Quality Offsets”** occur when a project proponent agrees to implement or finance upstream controls of point or nonpoint sources sufficient to offset the water quality effects

of the proposed action. The technical basis and support for the offset must be documented through an approach equal in methodology to the TMDL process established in accordance with the Section 303(d) requirements of the federal Clean Water Act. The TMDL must include an appropriate margin of safety that addresses, in particular, the uncertainties associated with any proposed nonpoint source controls, as well as variability in effluent quality for point sources.

## **B. ANTIDEGRADATION PROCEDURES**

- (1) **What is the purpose of this antidegradation policy?** This section contains the water quality antidegradation requirements for the state of Washington. These antidegradation requirements establish a structured process for restoring and maintaining the physical, chemical, and biological integrity of the surface waters of the state, and towards that end define conditions under which water quality can and cannot be degraded.
- (2) **Application of this section.** This section applies to all actions that contribute to the lowering of water quality in surface waters of the state which are reviewed for compliance with this chapter under state or federal authorities. The department intends to use and encourage the use of existing processes for project design and review and public involvement whenever those mechanisms can be modified to conform with the requirements of this section. It is the department's responsibility to make any final determinations regarding compliance with this section.
- (3) **AKART required of all actions.** To prevent and control the pollution of the waters of the state of Washington, any present or future actions that are likely to cause or contribute to the lowering of water quality of any surface waters of the state must at a minimum use all known, available, and reasonable methods of prevention, control and treatment (AKART) that apply to the action.
- (4) **Existing in-stream uses must be protected.** (a) Existing in-stream uses and the level of water quality necessary to provide full support to those uses must be maintained and protected. Further, under no circumstances are human actions alone or in combination to be allowed to jeopardize the long-term health and integrity of populations of state candidate, or federally proposed or listed, threatened or endangered species. No provision in this chapter is to be interpreted as suspending these absolute levels of protection.  
  
(b) **Water quality criteria set the minimum level of use protection.** The numeric and narrative criteria in this chapter establish the minimum level of protection for beneficial uses. Except as specifically allowed in this chapter, no action, existing or planned, may be allowed to cause water quality conditions to violate the water quality criteria and standards established for waterbodies through this chapter. The department will establish water quality requirements in addition to those specifically listed in this chapter on a case-specific basis where determined necessary to ensure full support of existing uses.  
  
(c) **No further lowering of quality is allowed for water quality parameters not currently meeting standards.** Where a water quality parameter is not meeting narrative or numeric criteria established to protect designated or existing uses, no new or expanded actions will be allowed that will further lower the quality of the water for that parameter (a mixing zone formally authorized under WAC 173-201A-100 can be used as the point of compliance for this provision). For parameters not meeting those criteria, the department will take appropriate and definitive steps, such as the development of Total Maximum Daily Loads (TMDLs) with associated control plans, to bring the water quality back to levels which meet the water quality standards and provide full support for existing and



designated uses. Actions that lower water quality but which are operating in compliance with formally established pollution control plans and requirements, such as those associated with a TMDL, or are in compliance with subsection (6) of this section may be allowed. However, these actions will not be allowed where doing so would increase the harm to in-stream uses or further jeopardize threatened or endangered species. Designated uses may only be removed from protection under this chapter where they are not existing uses and their removal meets the conditions established in the federal rules at 40 CFR 131.10, Designation of Uses.

**(d) Naturally poor water quality.** Where numeric and narrative water quality criteria are not attained due to natural conditions, human actions and influences are not allowed to further lower the quality of those parameters; except where and to the extent specifically provided for in the criteria itself.

**(5) Allowing degradation of high quality water constituents.** (a) The lowering of water quality for high quality water constituents [see definition in 020] by new or expanded actions is not permissible except when:

- (i) The department determines, after satisfactory public participation and intergovernmental coordination [see subsection 8 below], that allowing a lowering of water quality necessary to provide benefits that are in the overriding public interest [see subsection (5)(c) below]; and
- (ii) All wastes and other materials and substances discharged into those waters shall be provided with all known, available, and reasonable methods of prevention, control, and treatment by new and existing point sources before discharge. All actions which result in the pollution of waters from nonpoint sources shall be provided with all known, available, and reasonable best management practices [see subsection (6)(b) below]; and
- (iii) In the case of an entity having planning, managerial, or operational control over multiple actions affecting a waterbody, the entity has evaluated whether better controls on those other actions can be established to offset any lowering of water quality from the new or expanded action. Additionally, the entity must ensure those other actions are meeting, or are on a formal schedule to meet [WAC 173-201A-160(4)], all applicable state water quality standards; and
- (iv) The lowered water quality would still be of high enough quality to meet established numeric and narrative water quality criteria and provide full support for all existing in-stream uses [see subsection (4) above].

**(b) Evaluation of alternatives.** In determining if allowing a lowering of water quality is necessary, as required in (5)(a)(i), a reasonable effort must be made to identify obvious, less degrading alternatives that can be reasonably incorporated by the action. An evaluation of alternatives must be made a part of the antidegradation review process, unless such an evaluation has already been conducted for a specific activity, performed

when establishing AKART, or assessed as part of establishing effluent limit or best management practice requirements for a category of action. The following are examples of some broad categories of innovative alternatives that may be appropriately considered:

- (i) Pollution prevention measures (such as changes in plant processes, source reduction, and substitution with less toxic substances).
- (ii) Recycle/reuse of waste by-products or production materials and fluids;
- (iii) Application of water conservation methods;
- (iv) Alternative or enhanced treatment technology;
- (v) Improved operation and maintenance of existing treatment systems;
- (vi) Seasonal or controlled discharge options to avoid critical conditions of water quality;
- (vii) Establishing buffer areas where no, or less, activity will occur; and
- (viii) Land application to capture pollutants and reduce surface runoff, on-site treatment, or alternative discharge locations.
- (ix) Water quality offsets.

(c) **Determinations of overriding public interest.** A determination of overriding public interest should consider both the qualitative and quantitative benefits and costs of an action. A final decision is to be made by the department only after providing an opportunity for public and intergovernmental participation [see subsection 8 below]. The entity proposing an activity is responsible for describing the social, economic, and environmental costs and benefits associated with the lowering of water quality to help the department and the public understand how the action is in the overriding public interest. The following examples of benefits and costs are provided to assist in producing such an assessment. These examples should not be construed to constitute finite lists of possible benefits and costs, and an entity is not obligated to specifically address any of the examples provided in (5)(c)(i) or (5)(c)(ii) below.

(i) The following are some examples of economic and social benefits:

- (A) The entity conducting the action provides demonstration and documentation of innovative pollution control and management approaches in a manner that would allow a significant improvement in what is considered AKART for a particular industry or category of action;
- (B) The prevention or remediation of substantial environmental or public health threats; or
- (C) The creation of substantial benefits through measures such as:
  - (I) Creating or expanding employment;
  - (II) Reducing the unemployment rate;
  - (III) Increasing median family income;
  - (IV) Reducing the number of households below the poverty line;
  - (V) Increasing community tax base;
  - (VI) Provision of necessary social services; or
  - (VII) Environmental enhancement attributes associated with the activity.
  - (VIII) Development in conformance with long-term growth management plans meeting the State Growth Management Act.

(ii) The following are examples of costs associated with not maintaining water quality:

- (A) The loss of assimilative capacity that could otherwise be used for other types of industries and developments;
- (B) The impact to fishing, recreation, and tourism industries;
- (C) The general societal value affected by a reduction in the quality of the environment;
- (F) The societal and economic benefits of any loss in health protection;

(6) **General permits and control programs conditionally allowed.** (a) New or expanded actions conducted under general permits; or other general-coverage state, regional, or watershed-based pollution control programs, such as the Forest Practices Rules, will not require separate antidegradation reviews if Ecology determines the general permit or control program meets the antidegradation requirements of this section. To meet the requirements, general permits and control programs must be designed so that individual actions covered under the permit would not be expected to cause violations of water quality criteria, result in a further lowering of water quality for constituents reported on the most recent EPA approved Section 303(d) list (federal Clean Water Act required list of impaired waters), or lower water quality in waters listed in this section as formally designated Water Quality Preservation Areas.

(b) The department recognizes some point and nonpoint source and stormwater control programs are still in their initial stages of development. At such initial stages, insufficient information may exist regarding the existence, effectiveness, or costs of control practices for reducing pollution and meeting the water quality standards of this chapter. In these instances, the antidegradation requirements of this section can be considered met for permits and programs that have a formal process to select, develop, adopt, and refine control practices so as to protect water quality and meet the intent of this section. This adaptive process must ensure that information is developed and used expeditiously to revise the permit or program's requirements. The total time to review and refine management and control actions should rarely exceed 5 years, and the total time to bring any general permit or control program into full compliance with this chapter should rarely exceed ten years. Specific plans describing how information will be obtained and used to ensure full compliance with this chapter must be developed and documented in advance of permit or program approval under this section. The department recognizes and allows that municipal stormwater programs to protect or restore existing beneficial water uses from existing developments may sometimes require longer time periods.

(7) **Special protection for Water Quality Preservation Areas.**

(a) **Eligibility.** Waters meeting one or more of the following characteristics qualify for designation and protection as a Water Quality Preservation Area:

(i) Waters in an essentially pristine condition that occur in federal and state: parks,

monuments, preserves, wildlife refuges, wilderness areas, marine sanctuaries, estuarine research reserves, and wild and scenic rivers; or

- (ii) Unique aquatic habitat types (e.g., peat bogs) that by conventional water quality parameters (such as dissolved oxygen, temperature, sedimentation, etc.) are not considered high quality but which are exceptional and regionally rare examples of their kind, or waters having both exceptional water quality and unique and exceptional recreational value.

**(b) Designation procedures.** Any eligible waterbody or portion thereof may be nominated for protection as a Water Quality Preservation Area. Public nominations are to be made to the department in writing and must include sufficient information to show how the waterbody meets the appropriate criteria identified in (b) of this section. The department may consider requests for designation in coordination with its continued planning process, or in coordination with any ongoing and systematic schedule for applying staff resources across the state on a watershed-basis. After providing an opportunity for public and intergovernmental review [see subsection 8 below] the department will make a final determination on whether a nominated waterbody meets the qualifying conditions. Waterbodies determined to qualify will be listed in this chapter.

**(c) No lowering of water quality is allowed in Water Quality Preservation Areas.** The physical, chemical, and biological integrity of Water Quality Preservation Area waters must be maintained and protected from any and all human caused lowering of water quality. The only exceptions are as follows:

- (i) **Temporary activities.** Actions considered necessary to accommodate essential activities, or to otherwise protect the public interest, may be allowed to cause a temporary and limited lowering of water quality in a WQPA. Disruption to water quality or to existing uses should be restricted in duration (such as days or weeks, rather than months or years). Such actions must be conditioned and timed in a manner that will minimize water quality degradation and disturbance to existing and designated uses. For example, disturbances of temperature, dissolved oxygen, gravels, or suspended sediments would be most inappropriate and should be avoided during periods of intergravel egg incubation and emergence.
- (ii) **Treatment bypasses.** Treatment-works bypasses for sewage, waste, and stormwater are allowed where such a bypass is unavoidable to prevent loss of life, personal injury, or severe property damage, and there are no feasible alternatives to the bypass.
- (iii) **Hazard response actions.** Response actions taken in accordance with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), as amended, or similar federal or state authorities, undertaken to alleviate a release into the environment of substances which may pose an imminent and substantial danger to public health or welfare.
- (iv) **Atmospheric deposition.** Constituents of atmospheric deposition that do not

measurably increase the concentrations of these pollutants in the surface layer of the water, the sediments, or the tissues of aquatic life.

**(d) Water Quality Offsets.** A proposed action that will result in a new or expanded source to an ONRW may be allowed where the proponent agrees to implement or finance upstream controls of point or nonpoint sources sufficient to serve as water quality offsets for the proposed action; in effect creating a situation where no lowering of water quality would occur due to the action.

**(8) Public and intergovernmental review of antidegradation determinations.** The public must have an opportunity to review and comment on the implementation of this section. This opportunity may be incorporated within existing public involvement processes, such as when issuing wastewater discharge permits, as long as the following review steps are included:

**(a) General Public Notice.** Public notice should be tailored to the antidegradation issue being determined:

- (i) Where the antidegradation determination under review is only if the action will meet water quality standards and protect the designated and existing uses (such as a typical NPDES discharge permit that may lower the quality of a high quality water constituent), public notice may focus on the local area. In such a case, written notice to persons in the local area known to be interested in either the waterbody or the action, and notice published in both a local and an appropriate regional newspaper will be sufficient.
- (ii) Where the antidegradation determination involves establishing Water Quality Preservation Areas, or approving new or expanded discharges in WQPA waters, broader statewide notice must occur. Broader public notice consists of notifying members of the public using a statewide mailing list appropriate for water quality issues; and posting a notice in one local newspaper and at least two of the largest circulation regional papers, including one outside the region where the waters are located. Large circulation regional papers would include those based in Seattle, Spokane, Vancouver, and Tricities.
- (iii) Whether a public notice is targeted to the local area or statewide, a public meeting with adequate public notice and outreach efforts must be held if requested by any governmental entity affected by the determination, or if requested by a diversity of interested public or private parties.
- (iv) In all cases, public notice must include the name of a contact person knowledgeable of the action who can provide supporting information, and the public should be provided with an ample opportunity to comment on preliminary antidegradation decisions.

**(b) Intergovernmental coordination.** To enhance the value of the general public notice requirements established above in (a), a reasonable attempt must be made to identify state

and local governments, federal agencies, and native American tribes that would likely be affected or interested in the waterbody or action under review. These governmental entities should be provided with direct notice of any preliminary antidegradation decision or unresolved antidegradation issues, and given a reasonable opportunity to provide comments that could influence the final determination.

- (c) **Documentation.** The basis for all final antidegradation decisions must be documented in public record files.